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Shigeru Oga

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EXAMINER

SUERETH, SARAH ELIZABETH

ART UNIT

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3749

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Response to Amendment

1. The amendment filed April 17, 2008 is acknowledged.

Information Disclosure Statement

2. Applicant has requested a new PTO-1449. As requested, the examiner has considered all of the relevant documents. However, since there is no English translation for Reference 2 on the IDS, only the Figures have been considered.

Claim Rejections - 35 USC § 103

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. **Claims 9, 10 and 12-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **U.S. Patent No. 4,006,589 to Schirmer** ("Schirmer") in view of **U.S. Patent No. 5,380,194 to Polomchak et al.** ("Polomchak").

Schirmer discloses in the specification and figures 1-17 an invention in the same field of endeavor as applicant's invention and as described in applicant's claims 9, 10, and 12-15.

In particular, in regard to at least claim 9, Schirmer shows a combustor for liquid fuel (see col. 20, lines 19-23) having a burner tile (18) and a burner nozzle (24).

In regard to the recitation in the preamble that the combustor is "for combusting animal and vegetable oils" it has been held if the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction. *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir. 1999); see also MPEP 2111.02. Further, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim

drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). In this case, as the combustor of Schirmer is intended for liquid fuels it would clearly be capable of operating using the animal and vegetable oils recited. Therefore, Schirmer meets this recitation in the preamble.

In regard to the recitation of "a means for supplying animal and vegetable oils..." it appears applicant intends to invoke 35 U.S.C. § 112 6th paragraph. This recitation satisfies the 3-prong analysis set forth in MPEP § 2181 and therefore has been regarded as invoking 35 U.S.C. § 112 6th paragraph. The elements that correspond to the "means for" clause are the fuel source F. The examiner has found that the prior art element of a fuel source and fuel inlet (see Fig. 1 in Schirmer) (A) performs the functioning specified in the claim, (B) is not excluded by any explicit definition provided in the specification for an equivalent, and (C) is an equivalent of the means plus function limitation. See MPEP § 2183.

In regard to the recitation of "a means for introducing a straight-line air current into the burner tile....." it appears applicant intends to invoke 35 U.S.C. § 112 6th paragraph. This recitation satisfies the 3-prong analysis set forth in MPEP § 2181 and therefore has been regarded as invoking 35 U.S.C. § 112 6th paragraph. The elements that correspond to the "means for" clause are the primary air fed passage (7), the wind box (5), the feed conduit (11) and blower (13). The examiner has found that the prior art elements of the flow controller (114), air feed passage (unnumbered), valve (116), and feed conduit (118) substantially (A) perform the functioning specified in the claim,

(B) are not excluded by any explicit definition provided in the specification for an equivalent, and (C) are an equivalent of the means plus function limitation. See MPEP § 2183. **However, Schirmer does not expressly provide the element of a blower.** Note that Schirmer does specify that the air may be introduced axially which is understood to be in a straight-line (see abstract).

To remedy the possible deficiency of a lack of an express showing of a blower the examiner turns to Polomchak. As clearly shown in Polomchak it is well understood in the art that the means by which a flow of air is provided axially to a fuel nozzle is through the use of a conventional blower (92) (see Polomchak, col. 4, lines 55-61). Accordingly, a person of ordinary skill in the art would reasonably understand that a blower such as that shown in Polomchak would be incorporated into the air feed means of Schirmer for the expected and predictable result of serving as directing the air to the nozzle.

In regard to the recitation of "a means for forming the field of centrifugal force surrounding the straight-line air current..." it appears applicant intends to invoke 35 U.S.C. § 112 6th paragraph. This recitation satisfies the 3-prong analysis set forth in MPEP § 2181 and therefore has been regarded as invoking 35 U.S.C. § 112 6th paragraph. The elements that correspond to the "means for" clause are the secondary feed passage (19) and opening end (26) that is tangentially arranged. The examiner has found that the prior art elements of the secondary air inlet means that tangentially admits secondary air (see col. 4, lines 27-30) (A) perform the functioning specified in the claim, (B) are not excluded by any explicit definition provided in the specification for

an equivalent, and (C) are an equivalent of the means plus function limitation. See MPEP § 2183.

Schirmer further specifies that the fuel droplets are atomized (see col. 5, lines 60-62) and would function to "take various orbits in line with the masses within the field of centrifugal force and combusted" as recited.

In regard to at least claim 10, the nozzle (24) of Schirmer delivers atomized fuel toward the axially central area of the turning air current (see Fig. 1 and col. 2, line 65 through col. 4, lines 6).

In regard to at least claim 12, the burner tile of Schirmer is of cylindrical configuration (see at least Figs. 1-14).

In regard to at least claim 13, it appears by reciting "a means for adjusting the position of the ignition flames in the central are of the burner tile" applicant intends to invoke 35 U.S.C. § 112 6th paragraph. This recitation satisfies the 3-prong analysis set forth in MPEP § 2181 and therefore has been regarded as invoking 35 U.S.C. § 112 6th paragraph. The elements that correspond to the "means for" clause are the ignition burner (29). The examiner has found that the prior art elements of the igniter means (37) (A) perform the functioning specified in the claim, (B) are not excluded by any explicit definition provided in the specification for an equivalent, and (C) are an equivalent of the means plus function limitation. See MPEP § 2183.

In regard to at least claim 14, it appears by reciting "a means for adjusting the pressure and the flow rate of the straight-line air current relative to the turning air

current" applicant intends to invoke 35 U.S.C. § 112 6th paragraph. This recitation satisfies the 3-prong analysis set forth in MPEP § 2181 and therefore has been regarded as invoking 35 U.S.C. § 112 6th paragraph. The elements that correspond to the "means for" clause are a blower (13 and/or 27). As noted above, while Schirmer does not expressly provide a blower, the combined teachings of Schirmer and Polomchak recognize that a blower would be used to direct the flow of air in line (118). Further Schirmer clearly provides that either the air flow volume or pressure through valve (116) are controlled as desired (see col. 6, lines 53-55).

In regard to at least claim 15, the igniter (27) would be capable of providing sufficient heat energy for allowing continuous propagation of combustion of the employed liquid fuel as the entire purpose of the igniter is to create a flame that is maintained at the nozzle exit and propagates in flames tube (14).

6. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over Schirmer in view of Polomchak as applied to claim 9 above, and further in view of **U.S. Patent No. 4,974,780 to Nakamura et al.** ("Nakamura").

As noted above, Schirmer and Polomchak disclose substantially all the limitations of claim 11. However, in regard to the recitation of "a means for adjusting the mass of the fuel droplets atomized..." it appears applicant intends to invoke 35 U.S.C. § 112 6th paragraph. This recitation satisfies the 3-prong analysis set forth in MPEP § 2181 and therefore has been regarded as invoking 35 U.S.C. § 112 6th paragraph. The elements that correspond to the "means for" clause are the ultrasonic generator 31 and

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fuel-atomizing nozzle 17. While Schirmer clearly shows an atomizing nozzle (24), the reference does not disclose an ultrasonic generator.

To remedy the deficiency the examiner turns to Nakamura. Nakamura shows a fuel atomizing nozzle that includes an ultrasonic generator (10).

Therefore, in regard to claim 11, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the fuel atomizing nozzle of Schirmer to incorporate the ultrasonic generator of Nakamura as such a device is recognized in the art to desirably provide for effective fuel atomization (see Nakamura col. 3, lines 65 through col. 4, line 9). Therefore the combined teachings of Schirmer and Nakamura suggest an ultrasonic generator and fuel-atomizing nozzle that (A) perform the functioning specified in the claim, (B) are not excluded by any explicit definition provided in the specification for an equivalent, and (C) are an equivalent of the means plus function limitation. See MPEP § 2183.

Response to Arguments

7. Applicant's arguments filed 4/17/08 have been fully considered but they are not persuasive. Applicant argues that Schirmer does not disclose that air flows through the burner from one end to the other in an axial direction. However, Schirmer discloses that air enters the burner at one end (near nozzle 24) in an axial direction (abstract, 7). Although supplemental air is introduced tangentially (rest of abstract), the initial air stream mixes with fuel, is combusted, and continues in an axial direction through the burner to the opposite end (34).

8. To support the assertion that Schimmer does not show an axial air stream, applicant cites Schirmer discussing an embodiment where fuel enters axially and air tangentially (col. 7, lines 20-27), but in that same passage Schimmer explicitly discloses modifying that configuration to have the air also enter axially (col. 7, lines 20-21).

Conclusion

9. **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah Suereth whose telephone number is (571)272-9061. The examiner can normally be reached on Mondays & Tuesdays 8:00AM-4:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven McAllister, can be reached (571) 272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sarah Suereth/

Examiner, Art Unit 3749

/Steven B. McAllister/

Supervisory Patent Examiner, Art Unit 3749

